Clean Version of Claims

1. (Four times amended) A method of food product testing, such method including the steps of

selecting a sample of a food product having at least one known qualitative property;

preparing the sample for assay;

assaying the sample, wherein the assay comprises the step of hybridizing genomic material in the sample to a probe matrix having a plurality of target species;

forming an output distribution representative of each of the plurality of target species;

storing the output distribution in a database; and

mining the database to correlate the output distribution with the at least one known qualitative property.

2. The method of claim 1, wherein the step of preparing includes the step of culturing the food sample to increase populations of a plurality of the target species prior to testing with the array of probes.

3. The method of claim 2, wherein the step of preparing includes the steps of

extracting nucleic acid from target organisms, and

labeling and amplification of gene regions prior to detection with the probe array.

4. The method of claim 3, wherein the step of labeling is performed after the step of amplification.

5. The method of claim 3, wherein the step of amplification is performed by automated fluidics and incubation to produce output material for detection by said array.

D2

6. (Once Amended) The method of claim 1, wherein the steps of preparing and assaying further comprise utilizing an automated sample preparation and array testing system.

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D3

8. (Once amended) The method of claim 1, wherein the step of preparing the sample includes the steps of recovering a plurality of different microorganisms from the food sample, extracting nucleic acids from the plural different microorganisms, and simultaneously amplifying plural target sequences present in the recovered nucleic acids for each of said different microorganisms.

9. (Twice Amended) The method of claim 1, further comprising the step of mining the database wherein the database includes data of at least one type selected from among

(i) other output distributions,

(ii) parameters related to the source, condition or processing of food in the sample from which the output distribution was taken, and

(iii) parameters related to the source, condition or processing of food in the sample from which other output distributions were taken.

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14. (Four times amended) A testing method for food quality and processing comprising the steps of

selecting a sample of a food product having at least one known qualitative property;

preparing an array having a plurality of probes, each probe being directed to sequences from a plurality of different target species;

preparing a sample of the food product, wherein the step of preparing a sample includes extracting nucleic acids from the sample;

amplifying the extracted nucleic acids with a PCR protocol such that the target sequences are preferentially amplified;

hybridizing the amplified nucleic acids to the probes on the array;

forming an output distribution representative of the plurality of target species present in the sample;

storing the output distribution in a database; and

mining the database to correlate the output distribution with the at least one known qualitative property.

15. CANCELED.

16. CANCELED.

17. The testing method of claim 14, wherein the species are foodborne species affecting food safety or quality.

18. The testing method of claim 14, wherein the target sequences include species sequences coding for factors involved in pathogenesis or virulence factors.

19. The testing method of claim 14, wherein the target sequences are species sequences selected for efficient PCR amplification as a group.

20. The testing method of claim 14, wherein the array tests for a palette of species selected from among product colonizing species, environment colonizing species, and mammalian colonizing species.

21. The testing method of claim 16, further comprising the step of displaying the distribution with a note describing adverse consequences or process warning indications associated with the detected distribution.

22. CANCELED

23. The testing method of claim 14, wherein the target sequences are species sequences selected for efficient probe hybridization and detection as a group.

24. The testing method of claim 14, further including the steps of determining sensitivity and cross reactivity of the array.

25. The testing method of claim 14, wherein the output distribution indicates amount of each target species present in the sample.

26. The method of claim 1, wherein the qualitative properties are selected from the group comprising smell, texture, organoleptic properties, and taste.

27. The method of claim 1, wherein the method further comprises correlating the output distribution with processing conditions.

28. The method of claim 27, wherein processing conditions are selected from the group comprising quality and source of a component, flavor potential, and shelf-life.

29. The testing method of claim 14, wherein the qualitative properties are selected from the group comprising smell, texture, organoleptic properties, and taste.

30. The testing method of claim 14, wherein the method further comprises correlating the output distribution with processing conditions.

31. The testing method of claim 30, wherein processing conditions are selected from the group comprising quality and source of a component, flavor potential, and shelf-life.